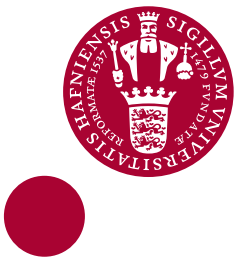

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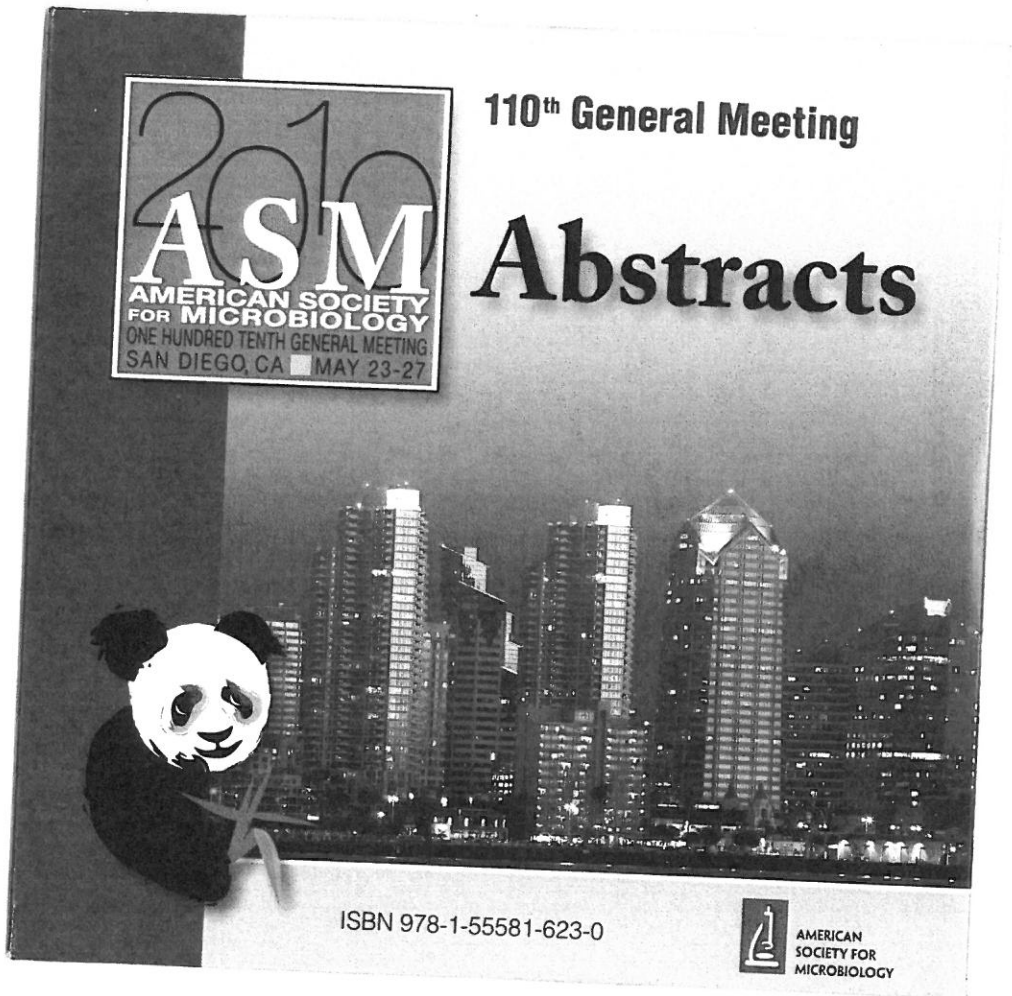
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Polyamine Biosynthesis Is Essential For Macrophage Cytotoxicity Of *Salmonella* Typhimurium

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Background. *Salmonella enterica* are intracellular bacteria that cause intestinal and systemic diseases, and are able to replicate within host cells. In the past decades many essential virulence factors of *Salmonella* have been identified by exhaustive genetic screens. While these studies have made crucial contributions to our understanding of *Salmonella* virulence, it is well-known that bacteria harbour redundant pathways for functions central to their lifestyle. These pathways are overlooked by classic genetic screens. To identify redundant pathways required for virulence of *Salmonella enterica* Serovar Typhimurium (*S.* Typhimurium) we have looked for redundant genes that are up-regulated during the infection of macrophages indicating a role in virulence/intracellular survival. Polyamines are small poly-cationic amines present in all cells. They have a role in protein synthesis and amino acid metabolism and have in bacteria been linked to virulence, stress-adaptation, and translation. The polyamine transporters and biosynthesis proteins constitute a group of almost 10 enzymes functioning to provide the bacterium with polyamines. Expression of some of these enzymes is up-regulated during infection of cell cultures indicating a role in intracellular survival/replication.

Methods. Lambda-red mutagenesis, cell assays, Cytotoxicity assay

Results and Conclusion. In this study we have investigated the role of polyamines in *S.* Typhimurium virulence. We show that polyamine biosynthesis is essential for *S.* Typhimurium cytotoxicity against macrophages. Furthermore, this phenotype is complemented by the addition of polyamines to the growth media of the biosynthesis mutant prior to infection. These observations point to a key role for polyamines in the virulence of *S.* Typhimurium. Further experiments are underway to elucidate the mechanisms of polyamine mediated cytotoxicity of *S.* Typhimurium.